



QUESTION BANK

Sub.Code : CS1302

Semester : VI

Sub.Title : COMPUTER NETWORKS

**UNIT I
DATA COMMUNICATIONS
PART A (2 Marks)**

1. Define Data communication
2. List out the characteristics of data communication
3. What are the components of data communication?
4. What are the various forms of data?
5. What are the various types of data flow?
6. Define networks
7. Define Distributed Systems
8. Define Distributed Processing
9. Define Transit time and Response time
10. Define Topology
11. What are the types of topology available and the number of links required to connect n machines?
12. Define Protocol.
13. Why are protocols needed?
14. What are the key elements of a protocol?
15. Why are standards needed?
16. Who are the standard committee?
17. Define OSI model
18. What are the seven layers of OSI Model?
19. Define Network architecture
20. Define Protocol stack
21. Define Transmission medium
22. Define Guided Media
23. Define Unguided media
24. Define Line coding
25. What is the relationship between data element and signal element?
26. Define data rate and signal rate
27. Define Bandwidth
28. What are the line coding scheme available?
29. How does NRZ – L differ from NRZ – I ?
30. Define Modem
31. What are the standards available in modem?
32. Discuss the mode for propagating light along optical channels
33. What is the difference between a passive and an active hub?
34. What are the three criteria necessary for effective and efficient networks?

PART B

1. What are the functions of OSI layers? Discuss. (16)
2. a. Explain the types of line coding with neat diagrams. (8)

- b. Explain about RS-232 interface. (8)
3. Explain in detail about the types of topologies. (16)
4. Explain detail about the transmission media for data transmission. (16)
5. a. i. What is a protocol? List the three key elements of a protocol. (4)
 - ii. With relevant examples differentiate between simplex, half duplex and full duplex communication. (4)
- b. i. A sine wave complete one cycle in 25 microseconds. What is its frequency? Express the frequency in KHz. (4)
 - ii. A digital signal has a bit interval of 40 microseconds. What is the bit rate? Express the bit rate in Kbps. (4)
6. What is the difference between a protocol and a service interface? Explain in terms of a ISO seven layer model. (16)
7. a. List the four properties by which transmission media can differ (4)
 - b. Three packet switching networks each contain n nodes. The networks has a star topology with a central switch, a ring respectively and a third is fully interconnected with a wire from every node to every other node. What are the best, average and worst case transmission paths in hops? (12)
8. a. Describe the key elements of protocols and the standards. (8)
 - b. Explain in detail the data transmission in OSI reference model. (8)

UNIT II
DATA LINK LAYER
PART A (2 Marks)

1. List out the functions of data link control.
2. Define errors.
3. List out the types of error.
4. Define error detection.
5. Define error correction.
6. List out error correction mechanism.
7. Define Block coding.
8. Draw the process of error detection in block coding ?
9. Define hamming distance.
10. Find the Hamming distance
11. Define simple parity check code.
12. Define flow control.
13. Define error control.
14. Define ARQ
15. Define Piggybacking
16. Define sliding window
17. Define HDLC and its transfer mode.
18. List out the frames in HDLC and its purpose.
19. Draw the neat diagrams of frame format of various frames of HDLC.
20. List out the control field for S frames.
21. Define LAN & List out the technologies.
22. What are the two sublayers of Data Link layer and define its functionalities.
23. Draw the frame format of Ethernet.
24. List out the Ethernet types.
25. Define CSMA /CD
26. Define NAV.
27. Define the frame format of IEEE 802.5
28. Define FDDI.
29. What are the devices used in SONET.
30. What are the four SONET layers?

5. a. Change the following IP address from dotted decimal notation to binary notation. (2)

i. 114.34.2.8 ii. 129.14.6.8b.

Change the following IP address from binary notation to dotted decimal notation. (2)

i. 01111111 11110000 01100111 01111101

ii. 11110111 11110011 10000111 11011101c.

Find the net and host id of the IP addresses (2)

i. 241.34.2.8

ii. 11101111 11110111 11000111 00011101d.

In a class C subnet, find out the network address (2)i. IP address: 182.44.82.16 Mask: 255.255.255.192e.

What is the maximum number of subnets in class A / B using the following masks.(8)i. 255.255.192.0ii.

255.192.0.0iii.255.255.0.0iv. 255.255.224.0

**UNIT IV
TRANSPORT LAYER
PART A (2 Marks)**

1. What are the services provided by the transport layer?
2. Define reliability and its aspects.
3. Define multiplexing.
4. Define RTT.
5. What is the purpose of Urgent pointer in the TCP header?
6. What is meant by slow start in TCP?
7. Define socket.
8. Define datagram socket.
9. Draw a neat diagram of a transport layer segment.
10. Differentiate between TCP and UDP.
11. Define QoS.
12. What are the steps in call set up process?
13. Define integrated services.
14. Name some tuples which is used to identify a TCP socket.
15. What do you mean by congestion?
16. What are the types of congestion control? Explain.
17. Define flow control?

PART B

1. A client uses UDP to send data to a server. The data are 16 bytes. Calculate the efficiency of the transmission at the UDP Level (16)
2. Explain the concepts behind in the Silly Window Syndrome. (16)
3. a. Draw and explain in detail about the State Transmission diagram of TCP (8)
b. Explain in detail about congestion avoidance in TCP (8)
4. a. Define UDP. (2)
b. Explain the segment format of UDP (6)
c. Explain in detail about congestion control (8)
5. a. Explain the three phases of TCP (8)
b. Explain the segment format of TCP (8)
6. Explain in detail about various techniques to improve Qos (16)
7. Explain in detail about integrated services (16)

**UNIT V
APPLICATION LAYER
PART A (2 Marks)**

1. Define DNS.
2. Name some generic domain labels
3. What are the four main properties of HTTP?
4. Describe why HTTP is designed as a stateless protocol.
5. Define virtual terminal.
6. What do you mean by active web pages?
7. What are the transmission modes of FTP?
8. Compare HTTP and FTP.
9. What are the types of source records?
10. What do you mean by FTP?
11. Draw the basic model of FTP.
12. What are the things supported by SMTP?
13. Draw the General format of HTTP request messages.
14. What are the categories of web documents and specify the languages which it is used for each document?
15. What are the things define by URL?
16. What are the aspects of information security?
17. Name some security services.
18. What are the types of security attacks?
19. Define AES.
20. Write the steps for an RSA.
21. What is the relationship between CGI & dynamic documents?
22. What is an active document?
23. What is conventional encryption?
24. Define the structure of data in FTP.
25. Define Catching in DNS.

PART B

1. Define DNS and explain the major sections of DNS in detail? (16)
2. With a neat diagram explain the basic model of FTP? (16)
3. What is public key cryptography and explain RSA in detail with one example.(16)
4. Explain various types of substitution techniques. (16)
5. a. SMTP, FTP and HTTP are protocols to transfer messages from one point to another. Compare and contrast their use (8)
b. Write short notes on HTTP Request and Response messages (8)
6. Explain in detail about SMTP. (16)
7. a. Use the following encryption algorithm to encrypt the message, a. Replace each character with its ASCII code. Add a 0 bit at the left to make each character 8 bits long. c. Swap the first 4 bits with the last 4 bits. d. Replace every 4 bits with its hexadecimal equivalent. What is the key in this method (8)
b. Using the RSA algorithm, encrypt and decrypt the message "BE" with key pairs (3,15) and (5,15). (8)